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ABSTRACT

This research uses the National Education Longitudinal Study of 1988 (NELS) to examine student misbehavior in the context of individual, familial, and institutional influences. The NELS is the third longitudinal study of students and schools conducted by the National Center for Education Statistics, and the NELS surveys encompass not only students but also their parents, teachers, and school administrators. The purpose of the paper is to add to the experiential base of students using data collected by NELS. Latent factor structures of student misbehavior as well as variables that aid in the explanation of student misbehavior were derived through common factor analysis of selected NELS items. Factor structures were tested for internal consistency and generalizability by gender, race, and socioeconomic status. A series of exploratory univariate and multivariate logistic regression models were used to determine risk factors for and protective factors against behavior problems. The NELS project provides a wealth of information with which to study student misbehavior, but it does pose certain limitations, including those of missing data, survey revisions, and survey breadth over depth. It was hypothesized that misbehavior would be distinct from substance abuse in high school, though strongly correlated, but scaling procedures yielded a misbehavior variable heavily defined by substance abuse. Misbehavior was inseparable from substance abuse, but substance abuse was not dependent on misbehavior for viability. One explanation for this finding may lie in the survey itself since misbehavior items were sparse and could have been explored more thoroughly. It was hypothesized that six variables would explain adolescent behavior, but only four reliable constructs were realized: student self-reported self-concept, peer influence, parent involvement, and administrator-reported school climate. It is hoped that this research can be used to design appropriate treatment and prevention programs for adolescents and to draw attention to the penetrating influence of a child's friends on his or her behavior. It can also show the wealth of data collected and the usefulness of NELS data. (Contains 1 table and 10 references.) (SLD)

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What Can NELS Tell Us About Adolescent Behavior Problems?

(And Vice Versa)

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Abstract

The National Education Longitudinal Study of 1988 (NELS) provides a wealth of information with which to study adolescent misbehavior, but it does pose certain challenges. Two problems arose due to the imposition of psychometric procedures on survey data in order to build reliable constructs. First, in large-scale surveys such as NELS, depth is often sacrificed for breadth in an effort to control costs while gathering information on the greatest number of topics. Creating psychometrically-sound measures was problematic in areas where survey items were sparse. Second, it is difficult to build sound constructs with missing data; with some NELS items, missing data were so prevalent that data imputation procedures would have created highly artificial structures. A third challenge encountered stems from revisions made across survey administrations. Even minor revisions in survey items present limitations when using NELS for longitudinal analyses.

A challenge specific to researchers exploring adolescent behavior problems arose due to the composition of items addressing problem behaviors in school. Like many school surveys, the NELS project focuses primarily on externalizing behaviors and does not address some important internalizing behavior problems. Because underreactive behaviors are not measured by the NELS surveys, researchers using NELS data to study youth behavior problems should be cognizant of the limited scope of behaviors addressed.

Even with these limitations, NELS does provide sufficient data to inform current thinking on many educational issues, including adolescent behavior problems. NELS also provides invaluable direction to educators on the relative importance of various influences of student misbehavior.

WHAT CAN NELS TELL US ABOUT ADOLESCENT BEHAVIOR PROBLEMS? (AND VICE VERSA)

Introduction

Regardless of who we are or where we live, we cannot escape the fact that many adolescents today are troubled. Recent violent incidents such as those in Colorado, Arkansas, and Kentucky have brought youth behavior to the forefront of the educational agenda. Though, student misbehavior, including both criminal and non-criminal activity, has long been a problem in our public schools. Clearly, schools operate in a larger environment of political and social forces that interact in a manner that can make the seemingly simple task of teaching and learning quite complex. Adding to this complexity, students bring to the classroom a set of experiences and values that are undeniably diverse. The resulting behavioral manifestations of these experiences and values are understandably quite diverse. With student indiscipline becoming an increasingly important problem in today's schools, it is important that we understand, to the extent possible, the underlying influences of behavior. Our understanding of what shapes a student's behavior is a first and necessary step towards developing programs that can positively affect indiscipline.

This research uses the National Education Longitudinal Study of 1988 (NELS) to examine student misbehavior in the context of individual, familial, social, and institutional influences. NELS is the U.S. Department of Education's National Center for Education Statistics third longitudinal study of students and schools (see NCES, 1996). The NELS project is notable not only because it follows a nationally representative sample of youth, but because it's surveys encompass not only students, but also their parents, teachers, and school administrators. Several studies have used the NELS data to examine student behavior and related issues such as school

dropout, but none have truly exploited the longitudinal nature of NELS to study student misbehavior. While the primary objective of this research was to examine adolescent behavior, other important objectives were to investigate the usefulness of using NELS to look at behavior problems as well as to exploit the NELS survey data for use in psychometric research. *The purpose of this paper is to add to the experiential base of studies using data collected by the National Education Longitudinal Study of 1988*, by documenting issues that arose during sample construction and statistical analyses in hopes that future researchers may benefit from those experiences.

Theoretical Framework

Conceptual explanations for behavior problems range from genetic abnormalities inherent in the misbehaving individual to context-specific societal interpretations of behavior problems. While many argue that *individuals* should be treated for behavior problems – due to inadequate personality development, physical disorder, need deprivation, or inappropriate behavior reinforcements – some argue that discipline problems should be treated within the *system* and not within the individual. Ecological theory, in particular, hypothesizes that behaviors are a result of a complex interaction of many forces acting between an individual and his or her environment. This research uses the National Education Longitudinal Study of 1988 (NELS) to examine student misbehavior from an *ecological* perspective, that is, examining misbehavior from multiple perspectives including the individual, familial, social, and institutional influences.

As stated in the preceding section, the purpose of this paper is to document the NELS-related learnings from doing this research, so that future NELS researchers may benefit from those experiences. Several studies have used NELS to explore student behavior. Weishew and Peng (1993) examined the base year NELS data to relate student misbehavior and a variety of

influences. Using the *school* as the unit of analysis and variables from all four NELS surveys (student, parent, teacher, and school administrator), the study found that schools with high misbehavior were more likely to be large, public, and urban; have substance abuse problems; have a high population of students from low socioeconomic status families; viewed as having a negative school climate and unfair discipline; and have teachers who had been teaching longer. The authors suspected that this last finding was related to teacher stress and burnout, though they were unable to test this hypothesis from the data. Finn (1993) used NELS to examine student at-riskness, including risk for academic failure and subsequent dropout. His study found that successful students are prepared for class and are not disruptive during class.

Methods

Latent factor structures of student misbehavior as well as variables that aid in the explanation of student misbehavior were derived through common factor analysis of selected NELS items. Factor structures were tested for internal consistency and generalizability by gender, race, and socioeconomic status. Internal consistency was measured using Cronbach's alpha. Cross-year factor structures and subgroup factor structures were compared using Wrigley-Neuhaus coefficients of congruence (Guadagnoli & Velicer, 1991). The dependent variable and scaled explanatory variables were constructed through unit-weighting the factor solutions. Each variable was transformed into a T-score using area conversion. Modeling focused on the 15% of students on both extremes of the behavior T-score distribution and attempted to explain what factors characterized these students.

A series of exploratory univariate and multivariate logistic regression models (see Hosmer and Lemeshow, 1989) were used to determine risk factors for and protective factors against behavior problems. The dependent variable, student misbehavior (derived through

common factor analysis as described above), was modeled for both the first and second NELS follow-ups, when most students were in 10th and 12th grade respectively. Models included *individual* (self-concept, attitudes towards school, reading achievement, mathematics achievement, race, sex, and age), *familial* (family structure, family socioeconomic status, and parental involvement), *social* (peer influence), and *institutional* variables (school type, school enrollment, community type, and school climate). From these exploratory models, three final models were constructed that parsimoniously explain 10th and 12th grade misbehavior. All analyses were performed at the individual student level. NELS weights were used in conjunction with the data to compensate for unequal probabilities of selection and to adjust for the effects of survey nonresponse.

Because the NELS:88 sample design was quite complex and included stratification, disproportionate sampling of certain strata, and clustered probability sampling, the statistical estimates calculated from this data are subject to sampling variability. To adjust for the design effect, WesVar Complex Samples Software was used to calculate standard errors and significance levels, while SAS was used to estimate regression coefficients and odds ratios. A Jacknife Repeated Replication (JRR) method was used to calculate appropriate standard errors based on the NELS complex sampling design.

Results

The National Education Longitudinal Study of 1988 provides a unique opportunity to comprehensively study educational issues, practices, and policies. As mentioned previously, NELS enables researchers to explore educational issues from an ecological perspective. This research examined the educational issue of student misbehavior by relating adolescent behavior problems to multiple influences. This report provides a documentation of the lessons learned

while using NELS. A separate manuscript documents the research findings relating individual, familial, social, and institutional influences to adolescent behavior.

Following is a discussion of some of the lessons learned particular to researchers examining adolescent behavior problems. While the NELS project provides a wealth of information with which to study student misbehavior, it does pose certain limitations. This section will explore three such limitations, namely missing data, survey revisions, and survey breadth over depth.

Lessons Learned. Perhaps one of the more interesting findings of this research was the composition of items signifying adolescent misbehavior. While it was hypothesized that misbehavior would be distinct from substance abuse in high school (though strongly correlated), scaling procedures yielded a misbehavior variable heavily defined by substance abuse. However, the relationship between misbehavior and substance abuse was not mutual in that misbehavior was inseparable from substance abuse, but substance abuse was not dependent upon misbehavior for viability.

One explanation for this unequal relationship between misbehavior and substance abuse lies within the survey itself. While some of the more common general misbehavior actions and outcomes were represented in NELS (e.g., tardiness, truancy, and suspension), overall the misbehavior items were sparse and could have been explored more thoroughly with both students and teachers. For example, NELS did not address some noncriminal externalizing behaviors such as hyperactivity and it did not probe deeply into behaviors such as verbal aggression, vandalism, and weapons possession. Yet, the NELS surveys do adequately address adolescent substance abuse in the first and second follow-ups, with multiple items measuring alcohol, marijuana, and cocaine use.

Further, with regard to adolescent behavior problems, NELS focuses primarily on externalizing behaviors and does not address some important internalizing behavior problems. Research in adolescent psychopathology has found two major dimensions of problem behavior in children and adolescents, underreactive behavior and overreactive behavior (McDermott, 1981, 1982, 1986). Moreover, psychopathologists have identified many important manifestations of youth underreactive behavior problems, such as schizoid behavior, immaturity, obsessive behavior, depression, and withdrawal (Taublieb, 1997). Because these behaviors are not measured by the NELS surveys, researchers using NELS data to study youth behavior problems should be cognizant of the limited scope of behaviors addressed.

While it was hypothesized that six variables would be formed that *explained* adolescent misbehavior, only four reliable constructs were realized: student reported self-concept, peer influence, and parent involvement, as well as administrator-reported school climate. Student reported self-concept was defined very broadly in NELS to include how students view themselves and their life, as the student survey only asked students to complete a general self-concept scale. The NELS student survey did not include items specifically related to academic self-concept, which is disappointing in that several researchers have found at least as strong an association between student misbehavior and academic self-concept as they have with general self-concept.

On the other hand, the peer influence items included in NELS are primarily academically-based and inquire as to whether school-related matters are important or not to friends. During the factor analysis of explanatory items, the peer influence items began to separate into academic and social peer influence constructs. Unfortunately, there were too few social peer influence items asked of students to form a reliable construct, so the peer influence

construct is primarily academically-based peer influence. In future research, it might be interesting to examine if and how social and academic peer influences differentially relate to adolescent misbehavior.

Like peer influence, parent involvement items were also academically oriented and included questions about how often the student and parent discuss educational issues and plans. Finally, the school climate construct is based primarily upon items dealing with the school administrator's perception of how teachers interact with and view students.

Missing Data. A total of 1,052 eighth-grade schools (about 3% of the nation's approximately 38,000 eighth-grade schools) were chosen at random to participate in the NELS:88 program. From each school, approximately 26 students were randomly selected. Base year survey completion rates for NELS:88 yielded 1,035 schools and 24,599 students. The weighted aggregate of these 24,599 students is representative of the roster of approximately 3,000,000 eighth grade students enrolled in public and private schools in 1988.

During the first and second follow-ups of NELS:88, students were freshened to be representative of the students enrolled in the 10th grade in 1990 and the 12th grade in 1992, respectively. In each of the follow-ups, student, teacher, and school administrator surveys were administered. The parent survey was not repeated in 1990, but it did return in the 1992 follow-up. Additionally, a new component was added in both follow-ups to track school dropouts. Student transcripts also were collected in the second follow-up.

For the purposes of this study, students who did not participate in all three school-year surveys -- the 1988 base year, the 1990 first follow-up, and the 1992 second follow-up -- were eliminated from the NELS:88 population. This sample of 16,489 students is referred to as the 88-92 panel. Further, in order to determine the effect of school size on misbehavior without

confounding it with possible effects resulting from school transfer, only panel students who were enrolled in the same high school during both the 1990 and 1992 measurement cycles were retained. Thus, high school dropouts and students who transferred schools between the 1990 and 1992 surveys were not included in the analyses. Finally, students who did not have a complete set of associated teacher, parent, and school data at each relevant time point were eliminated. Students who met the above criteria were drawn from the NELS:88 population; the resulting sample size was 3,919 students. NELS:88 weights were used in conjunction with the data to compensate for unequal probabilities of selection and to adjust for the effects of survey nonresponse.

Several data imputation methods were investigated in an effort to salvage subjects; however, with some NELS items, missing data were so prevalent that data imputation procedures would have created highly artificial structures. The effects of missing data are apparent when parameters of demographic characteristics of the eighth grade population in 1988 are compared to the same parameters based on the weighted subsample. For instance, the sample results in a higher percentage of females than males. Further, whites are over-represented in the subsample while blacks and hispanics are underrepresented. Proportionally more students from the Northeast and Midwest and fewer students from the South and West were retained in the subsample than existed in the population. Students from high socioeconomic status families had less missing data than those from low socioeconomic status families. Table 1 provides a comparison of the relevant demographic characteristics of the eighth grade population in 1988 to those of the weighted subsample.

Survey Revisions. Another limitation of using the NELS surveys stems from revisions made across survey administrations. Methodologically, NELS has not always been consistent

Table 1

Demographic Characteristics of Eighth-Grade Population and Subsample

	Population	Subsample
Gender		
Male	50.2%	44.0%
Female	49.8%	56.0%
Race		
Black	13.2%	6.1%
Hispanic	10.4%	5.4%
White	71.7%	84.3%
Region		
Northeast	19.2%	24.7%
Midwest	25.7%	33.6%
South	35.7%	29.5%
West	19.4%	12.2%
SES		
Low	23.6%	15.0%
Medium Low	24.9%	23.1%
Medium High	25.5%	27.4%
High	26.0%	34.5%

Note. Population parameters are based on a nationally representative weighted sample of 16,489 eighth grade students in 1988. Subsample parameters are based on a weighted subsample of 3,919 students extracted from the full sample.

across measurement points. Even minor revisions in survey items present limitations when using NELS for longitudinal analyses. Specifically, several items on the base year survey were altered in the 1990 and 1992 administrations and many additional items were added at subsequent measurement points. For example, neither peer influence items nor questions pertaining to substance abuse were included on the base year survey. Such changes make it difficult to include the 1988 survey data in longitudinal analyses of student misbehavior.

Further, many of the items included in the 1988 student survey are different from those included in the 1990 and 1992 surveys, making longitudinal analyses with these items difficult if not impossible. For example, in several circumstances the response point-scale of an item was changed between follow-ups and in some instances the stem of the item was altered. Thus, approximately 75 items that are common across the 1990 and 1992 student questionnaires were used in the analyses for this research. Twenty of these items pertain to student misbehavior. About 55 items address issues such as student participation in school activities, self-concept, peer influence, attitudes towards school, and parental involvement. About half of these items are identical to base year items and were used to relate base year measures to high school misbehavior. Additionally, standardized achievement test scores in reading and mathematics based on the cognitive test battery administered during the base year and at the first and second follow-ups were used in the analyses.

Survey Breadth Over Depth. This research attempted to bridge the fields of survey research and psychometrics by deriving psychometrically viable constructs from survey data. It is recognized that surveys are often not designed for the measurement of psychometrically-sound constructs, but rather they are more likely employed as an applied tool for gathering information

about society and social programs. Regardless, the unreliability in single-item measures often produces results that are uninterpretable or misleading (Rossi, Wright, & Anderson, 1983).

Even though developers of large-scale surveys such as NELS are experts in the field of survey design and have experience in phrasing survey items so as to minimize unreliability, the reliability of individual item responses is still unacceptable. It is possible to further improve measurement by using procedures such as item factoring to derive psychometrically sound variables, however this process becomes problematic when there are too few survey items surrounding a topic to create a viable construct. Evidence that the NELS developers recognized this limitation of surveys is apparent in several areas, such as self-concept and cognitive testing. Though, as is often times done in large surveys with broad-scale administration, depth is sacrificed for breadth in an effort to control costs while gathering the information on the greatest number of topics. Unfortunately the measurement of adolescent externalizing behaviors was one topic where depth was sacrificed for survey breadth while the measurement of internalizing adolescent behaviors was an area that was sacrificed almost in entirety. Again, this is not to necessarily criticize survey developers, it is simply to heighten awareness of, in general, the limitations involved in trying to psychometrically utilize survey instrumentation and more specifically, the limitations of using NELS to study student behavior problems.

Discussion

The composition of adolescent misbehavior as found in this research is compelling in that it is representative of a common view of problem behaviors in school. In measuring youth behavior problems, survey developers are not always cognizant of the research base on child and adolescent psychopathology, but rather refer to the common view of behavior problems. That is, while externalizing behavior problems may be the ones that schools address more frequently and

that are publicized in the media, internalizing behavior problems are equally as important and perhaps more important for future well-being when not identified and addressed in adolescence. Moreover, externalizing behavior problems are more prevalent in adolescent boys (McDermott & Weiss, 1995), as confirmed by this study. Yet, by focusing only on the typical problems that boys face during adolescence, instruments used to identify behavior problems are doing a disservice to many adolescents, especially adolescent girls, who more often manifest disturbance through withdrawal, depression, and indifference. It is plausible that adolescent substance abuse is comorbid with some internalizing behaviors (similar to the relationship between substance abuse and externalizing behaviors), though unfortunately this association could not be tested using NELS data. In future survey work, it is important that practitioners and researchers alike exploit the knowledge base in psychopathology in order to address behaviors in both sufficient depth and sufficient breadth.

As NCES embarks on the design and implementation of future longitudinal studies, it is recommended that survey developers pay special attention to item wording, item longevity, and response options within and across survey administrations. While NELS items pertaining to self-concept were stable from the base year through the second follow-up, inconsistencies were found for items relating to many other constructs. For example, items addressing student-reported attitudes towards school and peer influence measured these variables much more thoroughly in the second follow-up survey than in previous survey administrations. In addition, administrator-reported school climate items underwent a point-scale change between the first and second follow-ups. Finally, questions addressing student participation in school activities were not consistently worded across survey waves. Survey changes such as these pose difficulties to

researchers as they attempt to explore educational issues across time points and as they prepare data for analyses.

Documents compiled by NCES such as the instrumentation manuals are extremely beneficial to researchers. Specifically, the intracohort analyses provided in the NCES documentation are invaluable to researchers who want address research questions longitudinally. However, such documents can also be misleading if they do not reveal critical intricacies such as minor stem or anchor alterations. In addition to paying special attention to items across surveys in an effort to minimize inconsistencies, it is also recommended that NCES develop item maps (see Boruch & Terhanian, 1998) that can aid researchers in identifying item consistencies as well as irregularities across survey administrations.

Educational Importance of the Study

It is hoped that the findings from this research can be used to design appropriate treatment and prevention programs for adolescents, as well as draw attention to the penetrating influence of a child's friends on his or her behavior. It is also hoped that this research can aid future researchers in understanding the advantages and limitations of using NELS to study student behavior problems and the ramifications of imposing psychometric methodologies on survey research. Finally, it is hoped that this research can raise awareness of the wealth of already collected, easily accessible data available to all researchers as well as the endless array of research questions that might be explored through these data.

References

Dryfoos, J. G. (1990). Adolescents at risk. New York: Oxford University Press.

Finn, J. D. (1993). School engagements and students at risk. Washington, DC: National Center for Education Statistics. (ERIC Document Reproduction Service No. ED 362 322)

National Center for Education Statistics. (1996). National Education Longitudinal Study (NELS:88/94) methodology report. Washington, D.C.: U.S. Department of Education.

Guadagnoli, E., & Velicer, W. F. (1991). A comparison of pattern matching indices. Multivariate Behavioral Research, 26, 323-343.

Hosmer, D. W., & Lemeshow, S. (1989). Applied Logistic Regression. New York: John Wiley & Sons.

McDermott, P. A. (1981). The manifestation of problem behaviour in ten age groups of Canadian school children. Canadian Journal of Behavioural Science, 13(4), 310-319.

McDermott, P. A. (1982). Syndromes of social maladaptation among elementary school boys and girls. Psychology in the Schools, 19, 281-286.

McDermott, P. A. (1986). The observation and classification of exceptional child behavior. In R. T. Brown & C. R. Reynolds (Eds.), Psychological perspectives on childhood excpetionality: A handbook (pp. 136-180). New York: Wiley-Interscience.

Taublieb, A. B. (1997). The psychopathology of childhood and adolescence. New York: Addison-Wesley Educational Publishers.

Weishew, N. L., & Peng, S. S. (1993). Variables predicting students' problem behaviors. Journal of Educational Research, 87, 5-17.